

REMARKS

Consideration of this Amendment After Final Rejection is respectfully requested.

The Examiner is thanked for the telephonic interview conducted on May 6, 2003. In addition, the Examiner is thanked for a follow-up telephonic interview on May 7, 2003.

STATUS OF CLAIMS (37 C.F.R. § 1.173(c))

Claims 1-39 are pending in this reissue application. Patent claims 1-23 are pending in this application, stand allowed, and have been maintained unchanged, and previously-presented claims 24-39 have been rejected. Claims 1 (allowed), 4 (allowed), 15 (allowed), 17 (allowed), 20 (allowed), 21 (allowed), 24, 38, 32 and 36-38 are independent.

By this Amendment After Final Rejection Applicants again present new claims 24-39, claims 24, 28, 32 and 36-38 having been altered from the form in which they were previously presented in the Amendment filed on December 26, 2001 so as to clarify certain aspects of this invention¹.

In accordance with the practice specified in 37 C.F.R. § 1.173(c) and MPEP § 1453, claims 1-39 are presented with reference to the patent as issued, and the changes from the previous version of those claims (made with regard to claims 24, 28, 32 and 36-38 only) are discussed below in the section entitled Explanation of Support in the Disclosure for New

¹ This Amendment has been prepared utilizing the format prescribed in the Office of Patent Legal Administration - Pre-OG Notice entitled "Amendments in a Revised Format Now Permitted", signed by the Deputy Commissioner for Patent Examination Policy on January 31, 2003 and available on the U.S. Patent and Trademark Office Website.

Claims 24-39. Upon entry of these changes, claims 1 (allowed), 4 (allowed), 15 (allowed), 17 (allowed), 20 (allowed), 21 (allowed), 24, 38, 32 and 36-38 will remain independent.

Applicants thank the Examiner for the telephonic interview conducted on May 6, 2003. Although during that interview the Examiner noted that the rejected claims would be allowable if rewritten to include the features of allowed claim 39, Applicants respectfully decline to do so. Instead, Applicants have revised various claims to clarify aspects of this invention which avoid the art of record, as discussed in detail below in connection with the outstanding prior art rejection.

**EXPLANATION OF SUPPORT IN THE DISCLOSURE
FOR NEW CLAIMS 24-39 (37 C.F.R. § 1.173(c))**

As now presented, claims 24, 38, 32 and 36-38 differ from the versions presented in the Preliminary Amendment filed on October 11, 2001, and the Supplemental Preliminary Amendment filed on December 26, 2001 in that each of these independent claims now specifies that the paper feeding path extending at least from the contact position of the presser to the printing area is substantially flat. In addition, claims 24, 28 and 32 have been revised to specify that the projections are located beneath the paper feeding path.

Thus, in the interests of brevity, Applicants only will explain where in the original disclosure these aspects of the invention finds support. For an explanation of support in the disclosure for the other features of all the newly-presented claims, Applicants refer to and incorporate by reference herein the Explanations of Support in the Amendments filed on October 11, and December 26, 2001.

As now presented, claims 24, 28 and 32 specify that the projections are located beneath the printing paper. These claim features find support in the disclosure at col. 18, lines 8-15 and 33-34, as well as in Figs. 27-31, element 113.

Claims 24, 28, 32 and 36-38 also state that the paper feeding path extending at least from the contact position of the presser to the printing area is substantially flat. This claim feature is supported by Figs. 26 and 31, element 113 and 141, tangent line T and paper P, as well as in the disclosure at col. 7, lines 15-22 and col. 21, lines 12-16.

The Rejection
Under 35 U.S.C. § 103

Claims 24-38 were rejected under 35 U.S.C. § 103 as being unpatentable over Japanese Laid-Open Patent Appln. No. 4-7185 to Ishii et al. in view of U.S. Patent No. 5,136,308 to Saito et al. Applicants respectfully traverse this rejection, and submit the following arguments in support thereof.

As described in claim 24, the present invention is drawn to an ink jet printer for use with an ink jet head having a nose portion through which ink is ejected. This printer has a paper feeding path which guides a sheet of printing paper in a direction from a paper feeding side to a paper discharging side, a paper feed roller having a peripheral surface coincident with a portion of the paper feeding path, a driving device operatively coupled to the paper feed roller and selectively rotating the paper feed roller, a presser abutting the paper feed roller at a contact position, the contact position being located on the paper feeding path so that when the paper feed roller is rotated by the driving device the sheet of printing paper is moved along the paper feeding path, and a flat paper guide surface disposed in the paper feeding path downstream of the contact position. Other features of the invention include a printing area located between the

flat paper guide surface and the ink jet head and corresponding to a region over which ink can be applied by ejection by the ink jet head and a plurality of projections disposed on the paper guide surface, at least some of which projections are at least in part disposed inside of the printing area which is located between the contact position where the presser abuts the feed roller and a position where the nose portion of the ink jet head opposes the paper guide surface across the paper feeding path when the ink jet head ejects ink, the projections being arranged at intervals in a direction approximately transverse to and beneath the printing paper for supporting the sheet of paper moving along the paper feeding path. The paper feeding path, at least from the contact position of the presser to the printing area, is substantially flat.

In the interests of brevity, Applicants will not now summarize fully the invention as described in each of the other five rejected independent claims, claims 28, 32 and 36-38. However, it should be noted that each these other claims, in the same manner as claim 24, already described, specifically provides for projections located beneath the paper path and also that the paper path, in the region between the contact position of the presser and the printing, is flat.

Of course, if the Examiner desires a complete summary of those other claims, Applicants would be glad to present that summary in a supplemental Response.

Keeping the claimed invention in mind, Applicants respectfully traverse this rejection of claims 24-38 on grounds one skilled in the art would not be led to combine the two cited references in the manner suggested by the Examiner.

First, one skilled in the art seeking to overcome the problem of paper cockling in a flat-path printer, such as that shown in Ishii, would not look to Saito because Saito avoids cockling using a solution that cannot be employed in Ishii's flat-path printer or, for that matter

in the present invention. Specifically, Saito has a paper path which includes a **curve** between the contact point at the roller and the printing area (see Figs. 13 and 27). Although not specifically discussed in Saito, those skilled in the art will appreciate that this curvature prevents cockling of the recording paper. To establish such knowledge in the art, Applicants call attention to U.S. Patent No. 5,393,151 to Martin et al. at col. 7, lines 55-62.² This reference employs just such a curvature to control cockling of the moist recording medium.

It is therefore respectfully submitted that one skilled in the art would not employ Saito's ribs in Ishii's flat paper path, because Saito's ribs are meant to be used in a curved paper path. Nor would Saito's structure be used in a flat path ink jet printer as claimed.

There is still another reason why one skilled in the art would not use Saito's ribs in Ishii's flat paper path. As previously explained in the Response filed on November 14, 2002, which arguments are incorporated by reference herein, that combination would be discounted by one skilled in the art because in the flat paper path Saito's ribs would cause cockling (buckling) of the damp recording medium, and such cockling would prevent the intended operation of the print head of Ishii, the primary reference.³ Ishii has as a stated purpose keeping the gap between the recording head and the recording medium as small as possible. Ishii accomplishes this by supporting the recording head in a manner such that it can move up and down.

² Although Tanaka is not prior art as to this invention, it is proper to consider this reference because it shows issues of fact. See M.P.E.P. § 2124.

³ Applicants already have pointed out that the cited references are not properly combined because the asserted modification of Ishii would render Ishii unfit for its intended purpose, which is forbidden by M.P.E.P. § 2143.01, entitled "Suggestion or Motivation To Modify the References," and which states in part "The proposed modification cannot render the prior art unsatisfactory for its intended purpose".

Insofar as the Office Action, challenging this argument, asserted there is no evidence that Saito's ribs would have paper sagging between them (Office Action, page 4, § 6), Applicants respectfully submit that such evidence by way of accompanying U.S. Patent No. 5,515,094 to Tanaka et al. and No. 5,393,151 to Martin et al.

Tanaka depicts in Figs. 7A and 7B a moist recording medium which cockles such that some portions of the recording medium ride in the spaces between upstanding projections. Tanaka also states at page 2, lines 9-19, that cockling is the result of ink being applied to the recording medium.

Martin likewise explains that when the recording medium absorbs liquid during recording, the recording sheet bents downward into spaces between the cockle ribs (col. 7, lines 20-26).

Tanaka and Martin are in fact further evidence of the non-obviousness of the present invention. Tanaka and Martin **undercut** the assertion in the Office Action that, despite their inconsistent teachings which would lead to paper cockling when Saito's rib structure is used in Ishii, Ishii and Saito could be combined because those skilled in the art would have been able to solve this problem of cockling (the Office Action asserts a presser spring or discharge roller could be used to solve this problem). Tanaka and Martin both criticize the asserted solution to cockling - Tanaka disparages the use of a leaf plate to improve paper flatness(col. 1, line 60, to col. 2, line 36). Likewise, Martin disparages the use of a discharge roller to help draw the recording medium past the print area (col. 2, lines 40-42). This means that one skilled in the art would not combine Ishii with Saito and solve the cockling problems of that combination as the Examiner proposes because both Tanaka and Martin strongly criticize the solution asserted by the Examiner.

In view of such inherent cockling, Ishii's head could not be used with Saito's ribs in a flat paper path configuration, because Ishii's head would have to travel across the cockles in the recording medium formed between the ribs. As Ishii's head movable would shift up and down to follow the cockled recording medium, that head would strike and be damaged by those ribs.

One skilled in the art therefore would not modify Ishii's printer to use Saito's ribs, because (1) that would eliminate Saito's own structure for preventing cockling (paper curvature) and (2) such modification would not allow Ishii's printhead to operate in the manner intended, by following closely the recording medium.

Even if the references are combined, that combination still would not suggest all aspects of the present invention. Specifically, the combination of Ishii and Saito still would not suggest placing the projections in a particular area and beneath the flat paper path, as claimed.

Ishii was cited only as teaching certain aspects of an ink jet recording device relating to a flat paper path. The Examiner **admitted** that Ishii does not even suggest the provision of projections, much less projections arranged in the position claimed.

In an attempt to remedy the deficiencies of Ishii, the Office Action asserted that Figs. 31A and 32A of Saito taught ribs 12a.

Although Saito depicts ribs 12a, Saito still does not place those ribs in the manner claimed. In fact, Saito is silent as to the placement of the ribs relative to the print area.

The assertion in the Office Action that Saito's ribs are formed on the entire surface shown in Fig. 27 and so would extend beyond the printing area is respectfully traversed because such characterization is **inconsistent** with Figs. 27 or 31A-32B, and the discussion of those drawings at col. 12, lines 43-55, and col. 13, line 54, through col. 14, line 10. These

drawings do not even depict a recording head⁴, much less the position of the recording head relative to the ribs. Consequently, Saito does not suggest the claimed projection arrangement.

In fact, even if the recording head shown in Figs. 2 or 13 of Saito were applied to the structure shown in Figs. 27 or 31A-32B, that still would not suggest the claimed invention, as it is not clear taught in Saito's drawings where the area recorded by that recording head would lie. At best, all that is shown is a protrusion on the head; it is not clear where the print area lies relative to the projections. In comparison, application Figs. 29 and 31 depict print area PA.

Another reason why those skilled in the art would not modify Ishii to use Saito's structure is because the two references hold the recording medium in different and non-combinable orientations.

Ishii holds the recording medium in a plane horizontal to the ground.

Saito holds the recording medium in a vertical orientation, relative to the ground, not horizontal.

The assertion in the Office Action that whether ribs are considered to be beneath recording paper is a matter of perspective is respectfully traversed. While orientation may in some technologies be a "mere" matter of perspective, here, where fluids are used for recording, the flow and ejection properties of such fluids make orientation very important. Those skilled in the art will appreciate that an ink jet printer, owing to the complex fluid flow paths therein, cannot just be rotated 90° and still be expected to operate normally - the change in orientation will interfere with the movement of fluid from the reservoir to the head, and even the ejection

⁴ Compare Fig. 2, which depicts recording head 8.

of the fluid from the head to the recording medium will be altered. Accordingly, is not just a change of perspective to reorient an ink jet recorder.

If the Examiner still contends that reorientation of an ink jet head is a minor matter, the Examiner is respectfully requested to identify prior art teaching that an ink jet head can be so modified.

Since Saito only is available for possible combination with Ishii using the paper orientations shown in these references, the fact that Saito has a vertically-oriented print area, and Ishii has a horizontally-oriented print area, bars combination of these references.

In summary, these references cannot be combined in a way which would suggests the aspects of the claimed invention providing that the projections are arranged beneath the recording paper, and that the projections support the sheet of paper as it moves along a flat paper path.

For all the foregoing reasons, favorable reconsideration and withdrawal of this rejection are respectfully requested.

SUPPLEMENTAL INFORMATION DISCLOSURE STATEMENT

Applicants submit herewith for the Examiner's consideration copies of U.S. Patent No. 5,515,094 to Tanaka et al. and No. 5,391,151 to Martin et al.

In accordance with MPEP § 609 (III)(C)(3), a Statement under 37 C.F.R. § 1.97(e) has not been provided.

Pursuant to MPEP § 609 (III)(C)(3), the Examiner is respectfully requested to confirm that both Tanaka and Martin have been considered.

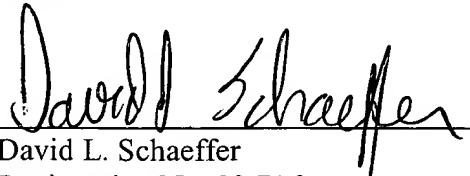
CONCLUSION

In view of the foregoing revisions and remarks, Applicants respectfully request entry of this amendment and submit that entry of this amendment will place the present application in condition for allowance. It is further submitted that entry of this amendment can be approved by the Examiner consistent with Patent and Trademark Office practice, since the changes it makes should not require a substantial amount of additional work by the Examiner. It is believed that the changes presented in this amendment either address matters of form or issues that the Examiner has previously considered.

It is respectfully submitted that in view of the foregoing revisions and remarks, all of the outstanding objections and rejections in this application have been overcome.

Favorable consideration and prompt allowance of this application is respectfully requested. In the event that there are any questions, or should additional information be required, please do not hesitate to contact applicant's attorney at the number listed below.

Respectfully submitted,

A handwritten signature in black ink, reading "David L. Schaeffer", is written over a horizontal line.

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